

APPENDIX

Claims 15, 17, 20, 21 and 28 are cancelled. New claims 36 and 37 are added.
Remaining claims are amended as follows:

20. (Amended) The method of claim [17] 37, wherein the oligomers independently comprise subunits selected from the group consisting of deoxyribonucleotides, ribonucleotides, and analogs of deoxyribonucleotides or ribonucleotides; and any single oligomer comprises one or a combination of two or more of said different types of subunits.
21. (Amended) The method of claim [17] 37 wherein each of said oligomers forming said content addressable memory matrix T_{ij} comprises, in order from the 5' end to the 3' end, (a) an oligomer strand comprising a nucleotide sequence representing an i-th component of V selected from the group consisting of E_i and \underline{E}_i for $i = 1$ to $i = m$, (b) an oligomer strand comprising a nucleotide sequence representing a j-th component of V selected from the group consisting of E_j and \underline{E}_j for $j = 1$ to $j = m$, wherein $j \neq i$, and (c) a nucleotide sequence F that is not complementary to any sequence E_i or \underline{E}_i for $i = 1$ to $i = m$.
22. (Amended) The method of claim [17] 37 wherein said single-stranded oligomers comprising a complete, stoichiometric set of E_i of step (c) and \underline{E}_i are anchored to a solid support.
27. (Thrice amended) The method of claim [11] 9 wherein said operation of matrix or vector algebra is determining the inner product of two vectors V and W , and said method comprises:
 - (i) obtaining for each vector V and W , sets of single-stranded oligomers E_i and \underline{E}_i representing the components of the vector, wherein the concentrations of the oligomers E_i and \underline{E}_i are proportional to the absolute values of the amplitudes of the components they represent; and

also obtaining a set of single-stranded oligomers E_i and \underline{E}_i representing the components of vector \underline{W} that are complementary to said oligomers representing vector W , wherein the relative concentrations of the oligomers representing \underline{W} are proportional to the concentrations of their complementary oligomers in W],

wherein the nucleotide sequences of oligomers that represent the components of said vectors V , W , and \underline{W} have minimal overlap with the nucleotide sequences of the oligomers representing the other components of said vectors];

(ii) combining samples of the oligomers representing vector V with samples of the oligomers representing vectors W and \underline{W} in separate respective first and second reaction mixtures and measuring [the] R_+ and R_- rates of hybridization [of said] associated with the respective first and second mixtures, and obtaining a numerical value proportional to the inner product of the two vectors from [said] a difference between said R_+ and R_- rates of hybridization.